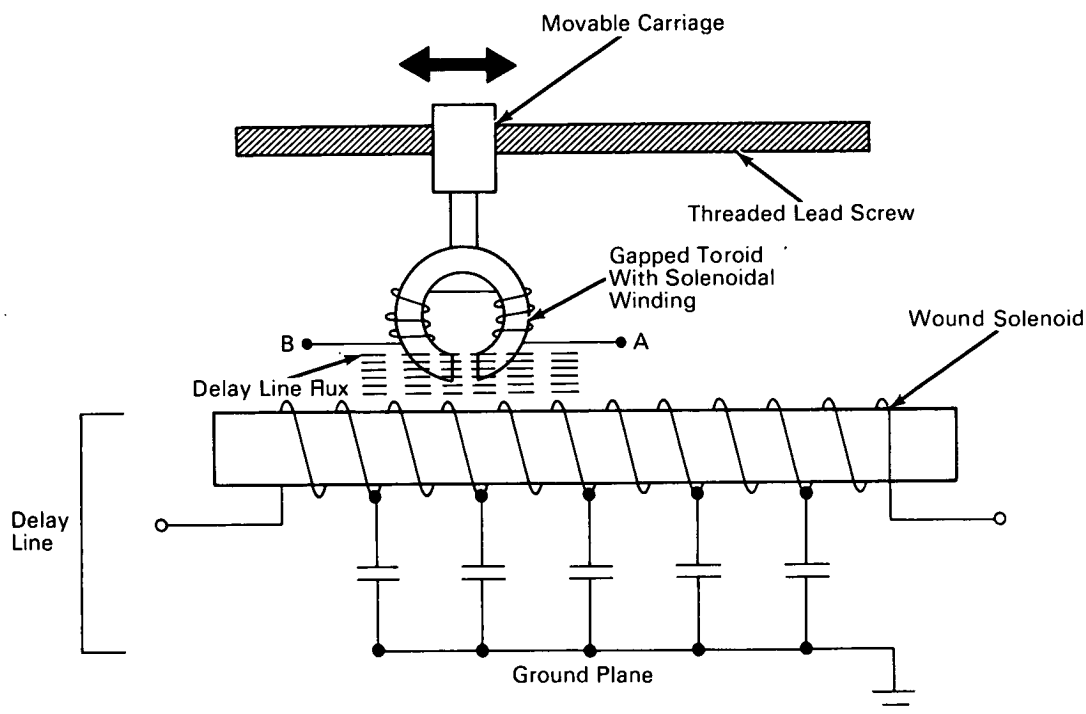


NASA TECH BRIEF



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Gapped Toroid Provides Infinite Resolution of Delay-Line Pickup



The problem: To provide continuous adjustment (infinite resolution) of the period of a time-delay line. Previous delay lines used a reiterative pie structure with an inductive winding tapped at regular intervals and returned to ground at those points through capacitors. Such a line was adjusted by means of a sliding ohmic contact. With this type of contact, the resolution (the smallest obtainable increment of delay) was determined by the number of turns per unit length of delay line.

The solution: The delayed signal is retrieved by means of a gapped toroid magnetically coupled to

the delay line. The toroid pickup is moved parallel to the delay line by means of a rotating screw.

How it's done: A gapped toroid is mounted on a movable carriage driven by a threaded lead screw. The toroid is positioned so that its gap is normal to the axis of the delay-line solenoid winding. The toroid is not in physical contact with the solenoid.

The toroid winding intercepts magnetic flux from the delay-line solenoid over an area determined by the width of the gap. The output of the toroid winding is obtained through terminals A and B, which are connected to a sliding contact pickup (not shown in illustration).

(continued overleaf)

The gapped toroid provides infinite resolution of delay because of the continuous nature of the delay-line flux; thus it is superior to previous ohmic contact devices.

Notes:

1. This invention should be of interest to manufacturers of signal-detection devices, ranging circuitry, and instrumentation equipment.

2. Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Goddard Space Flight Center
Greenbelt, Maryland, 20771
Reference: B65-10258

Patent status: NASA encourages the immediate commercial use of this invention. Inquiries about obtaining rights for its commercial use may be made to NASA, Code AGP, Washington, D.C., 20546.

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